

REMARKS

Claims 1-19 were pending in the present application. Claim 1 has been amended. Claim 18 has been canceled, and new claims 20-22 have been added. Support for new claims 20-22 can be found, e.g., on page 6, lines 1-14 of the present application. No new matter has been added. Claims 5, 13, 16, and 17 were provisionally withdrawn from consideration, pending the allowance of a generic claim. Therefore, claims 1-17 and 19-22 are now pending in the application.

Prior Art Rejections

Claims 1, 2, and 9-11 and 18 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,255,783 to Goodman et al. (hereinafter "Goodman"). Applicant respectfully traverses this rejection for at least the following reasons.

Amended claim 1 recites that the receptacle is configured to be able to contain an overpressure of at least 2000 bar. Goodman does not teach, disclose, or suggest this feature. In sharp contrast, Goodman discloses an evacuated semiconductor wafer container that may be evacuated, or "a portion of the gas within the [container 10] may be removed and then subsequently replaced with an inert gas...". (Col. 2, lines 41-62.) The container 10 is simply incapable of containing an overpressure of at least 2000 bar. The walls of the container 10 are formed of a moldable plastic. (Col. 2, lines 30-32.) In col. 3, lines 14-39, Goodman discloses that the cover 12 has a thin panel portion 27 such that its thinness "causes the panel to act like a flexible membrane so as to flex under conditions of vacuum pressure...". The walls of the cover 12 may have a thickness in the range of 0.050 to 0.075 [inches] and the panel portion 27 may have a thickness in the range of 0.010 to 0.040 [inches]. Clearly, at any pressure substantially greater than standard pressure, the container will either rupture at the panel portion 27 or blow open via joining edge portions 11.1, 12.1 (Figs. 1 and 6). Therefore, Goodman does not teach, disclose, or suggest a receptacle that is configured to be able to contain an overpressure of at least 2000 bar. The Office Action asserts on page 4 that "even a very weakly constructed receptacle can contain an extremely high pressure when the pressure on the exterior is the same...". However, this is not true when the weakly constructed receptacle contains a high overpressure with respect to the exterior, and amended claim 1 is addressed to an overpressure of at least 2000 bar.

In addition, Goodman does not relate to biological specimens or high pressure freezing. Thus, independent claim 1, and all claims dependent therefrom, are believed to be patentable over Goodman. Withdrawal of the rejections is respectfully requested.

Next, claims 1-4, 7-12, and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,938,058 to Kim (hereinafter "Kim") in view of Goodman. Applicant respectfully traverses this rejection for at least the following reasons.

Kim discloses a segmented multi-purpose portable container for storing small miscellaneous articles, such as toothbrushes, combs, and toothpaste. (Col. 3, lines 28-31.) Kim does not teach, disclose, or suggest a receptacle that is configured to be able to contain an overpressure of at least 2000 bar. Thus, Kim fails to cure the deficiencies of Goodman. Further, according to the Office Action, it would have been obvious to import the diamond coating of Goodman into the container of Kim "in order to form a hard, nearly perfect chemically resistant coating which has a low coefficient of friction to resist breakage, cracks and tearing, to resist chemical reaction and to assist in the low friction release of the specimen." Applicant respectfully disagrees. First, Kim and Goodman are from entirely different fields—i.e., no one skilled in the art of Kim (toothbrush containers) would look to the art of Goodman (evacuated semiconductor wafer containers), and vice versa. Second, Kim does not suggest that the container should be hard, chemically resistant, etc., and thus one of ordinary skill would have no motivation to import the diamond coating of Goodman. Third, one of the objects of Kim is to provide a container "that is relatively inexpensive to manufacture." (Col. 1, lines 28-30.) Thus, Kim teaches away from using expensive diamond materials. Fourth, Kim does not relate to biological specimens. Therefore, independent claim 1, and all claims dependent therefrom, are believed to be patentable over Kim and Goodman. Withdrawal of the rejections is respectfully requested.

Finally, claims 1-4, 6-12, 14, 15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,044,165 to Linner et al. (hereinafter "Linner") in view of Goodman. Applicant respectfully traverses this rejection for at least the following reasons.

Linner discloses an apparatus called a "cryo-slammer" in which a biological sample is slammed or plunged against a cryogenically cooled surface. (Abstract.) With reference to Fig. 14 and col. 16, lines 8-61, the shutter 65 is opened when the pressure inside vacuum chamber 21 reaches atmospheric pressure. Linner does not teach, disclose, or suggest a

receptacle that is configured to be able to contain an overpressure of at least 2000 bar. Further, if a high overpressure were applied to the inside of vacuum chamber 21, it is clear that shutter 65 would blow off—i.e., the cryo-slammer of Linner is simply incapable of containing an overpressure of at least 2000 bar. Goodman fails to cure the deficiencies of Linner. Thus, independent claim 1, and all claims dependent therefrom, are believed to be patentable over Linner and Goodman. Withdrawal of the rejections is respectfully requested.

New Claims 21 and 22

New claim 21 recites a specimen holder configured for holding the biological specimen during high-pressure freezing of the biological specimen, the specimen holder comprising at least one shaped part comprising a diamond material, and a source of cryogen connected to the specimen holder. None of the cited references individually teaches, discloses, or suggests these features. Further, the references are not combinable in a manner required to arrive at new claim 21.

Neither Goodman (directed to an evacuated wafer container) nor Kim (directed to a multi-purpose portable container) teaches, discloses, or suggests a source of cryogen. The Office Action admits on page 5 that Linner does not disclose the diamond material. Further, the Office Action states on page 7 that “high pressure freezing” in claim 1 (and new claim 21) does not preclude pressures lower than 100 psi, and that “Linner discloses that cooling fluids are typically supplied at a pressure of 10-15 psi...”. However, Linner discloses only that the coolant may have a pressure of 10-15 psi, not the specimen to be frozen. (Col. 16, lines 4-7.) As discussed, Linner discloses that the shutter 65 is opened when the pressure inside vacuum chamber 21 reaches atmospheric pressure. Therefore, Linner does not teach, disclose, or suggest high pressure freezing, no matter how “high pressure” is defined.

Further, none of the cited references discloses a motivation to combine the references. For example, none of the references discloses a motivation to import the source of cryogen of Linner into Goodman or Kim, as Linner, Goodman, and Kim are from entirely unrelated fields, Goodman does not disclose any need for cryogenically cooling semiconductor wafers, and Kim does not disclose any need for cryogenically cooling toothbrushes or the like.

Therefore, new claim 21, and new dependent claim 22, are believed to be patentable over the cited references. Allowance of the claims is respectfully requested.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. If claim 1 is allowed, Applicant respectfully requests consideration and allowance of the previously withdrawn claims.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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